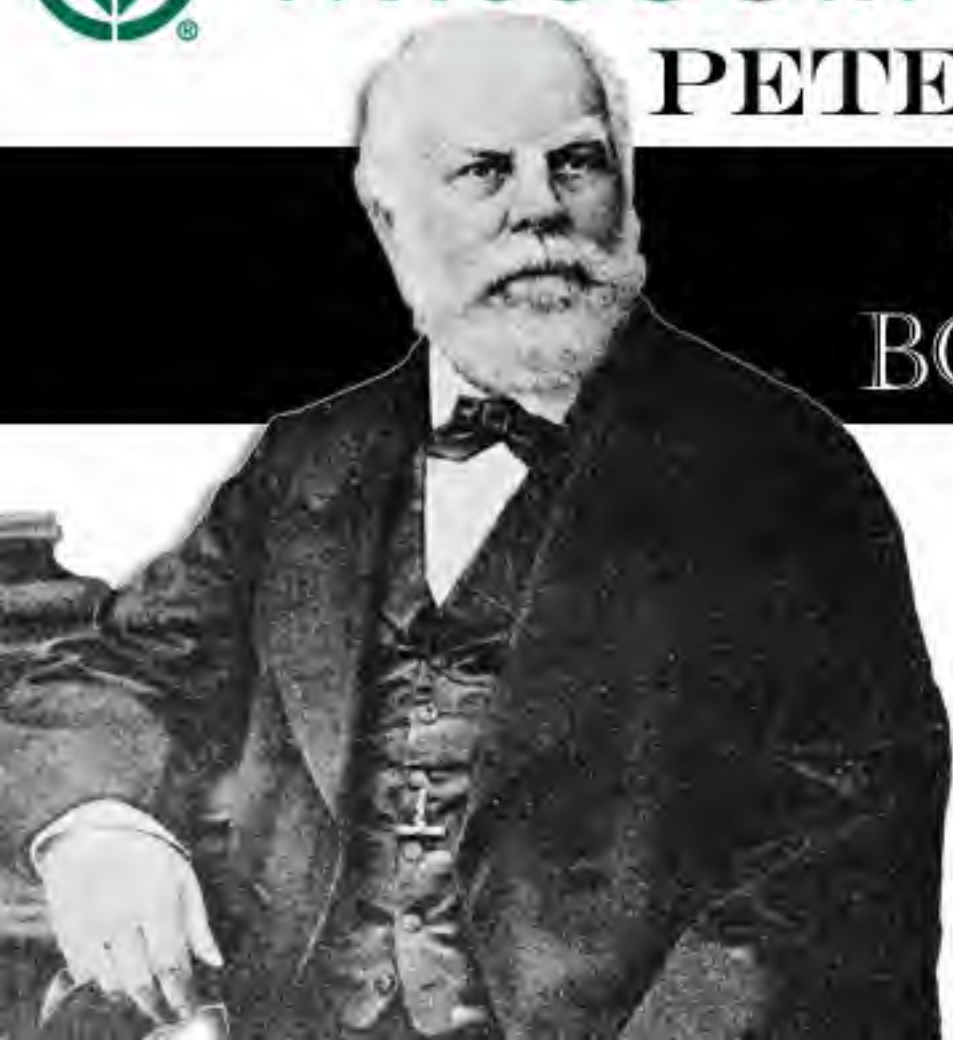


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GEORGE ENGELMANN
BOTANICAL NOTEBOOKS



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Nov^r Febr. 10th 1876

Memoranda, J. G. Lemmon

Abies amabilis (or magnifica)

Altitude 7,150 ft. to 7,600 ft.

Trees	Rings	Cones bu.	Length	diameter
No 1	148	3	2 feet	2 inches
" 2	94	3	1 "	1 "
3	113	4	2 "	4 "
4	156	6	2 "	2 "
5	22	4	2 "	1 "
6	210	1/2	1 "	2 "
7	90	1/2	1 "	1 "
8	165	6	2 "	7 "
9	93	3	1 "	1 "
10	22	2	1 "	1 "
11	123	5	1 "	2 1/2 "

The large tree (average) cut for centennial in Sept last, (sections sent you in box,) was growing near Wheeler lake south slope of Chiavaz Peak, 39 1/2° Lon. 120 1/2° W. Alt. 7,600 feet.

Height 162 feet; Circum at base; at cut, dia. rings
30 ft 6 in, 25 ft, 7 ft 10 in 392.

It required 3 days labor of myself and an assistant to get out the cuneate section. When the tree fell it carried ten more with it to the earth.

I hope you may see the specimens for Agricultural Dept sent to Dr. Bailey.



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The next hour after the box left my herbarium I was engaged upon specimens of *Abies* and *Juniperus* for you. I filled a little box with sections of *A. amabilis* and *A. grandis* sufficient, I hope to give you a clear idea of the growth of these trees. Then on one side is a few pieces of *Juniperus* Cal. I could not get a sound heart of a large tree, Always hollow. On top are some oak twigs and *Phoradendrons*.

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GEORGE ENGELMANN PAPERS

I will now give you some figures relating to the *Abies* trees at your request last autumn,

You asked 31 questions (by actual count) and I went on a special trip to Weather lake, looked over the forest where I cut trees the season before, counted, measured and noted as long as I thought I could afford time.



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great variety of frames for the various floral designs, which facilitate the work very materially.

BOUQUET TRIMMINGS.

Of the latest style and introduction, imported direct from Paris, of great beauty and convenience. We would call the special attention of the trade to this article, indispensable to any florist. Our stock is very fine, and large enough to supply the entire West. The following are the prices:

FINE BOUQUET HOLDERS, for weddings and parties, at prices ranging from \$2.50 to \$6.00 each.

LARGE ITALIAN HOLDERS, with gilt and medallions, at \$1.50 each, \$15.00 per doz.

" " " lined blue and medallion, 60c. each, \$7.00 per doz.

" " " white with medallion, 50c. each, \$5.00 per doz.

" " " white, lined pink and blue, 25c. each, \$2.25 per doz.

PLAIN WHITE ITALIAN HOLDERS, \$1.25, \$1.50, \$2.00; \$2.25, \$2.50 and \$4.00 per doz.

" " " lined with red, \$3.00 per doz.

" " " lined with blue, \$3.00 per doz.

PLAIN GOLD AND SILVER ITALIAN HOLDERS, \$3.50 and \$4.00 per doz.

BLACK PAPERS, for Mourning Bouquets, \$2.50 and \$3.50 per doz.

FLAT NATURAL PAPERS, for Pyramidal Bouquets, \$1.00, \$1.25, \$1.50, \$2.50 and \$3.00 per doz.

GARTON BOUQUET HOLDERS, 25c., 35c., 40c., 50c., 60c., 75c., 80c., 90c. and \$1.00 per doz.

GOLD AND SILVER LEAF BASKETS, for Natural Flowers, with tin dishes, \$2.50 each.

leaves thicker than the *canadensis*

thick L $\frac{2}{3}$ or mostly $\frac{3}{4}$ or even $\frac{7}{8}$ as thick as wide.

26 725 hard
34 5

Red fir

A. magnifica

California

Scale 10:

even-gorged not grown above

or only at base

newer *canadensis*



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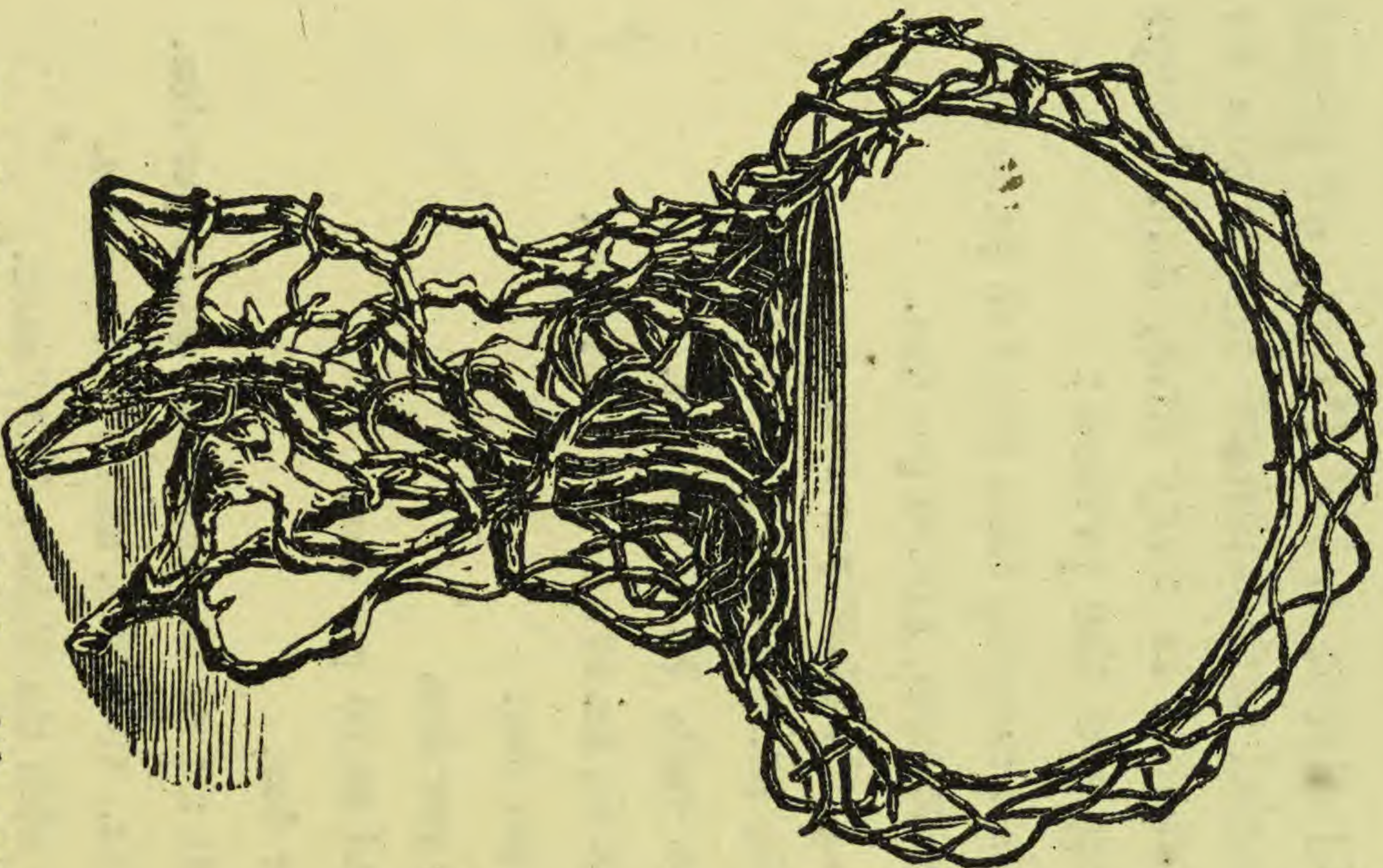
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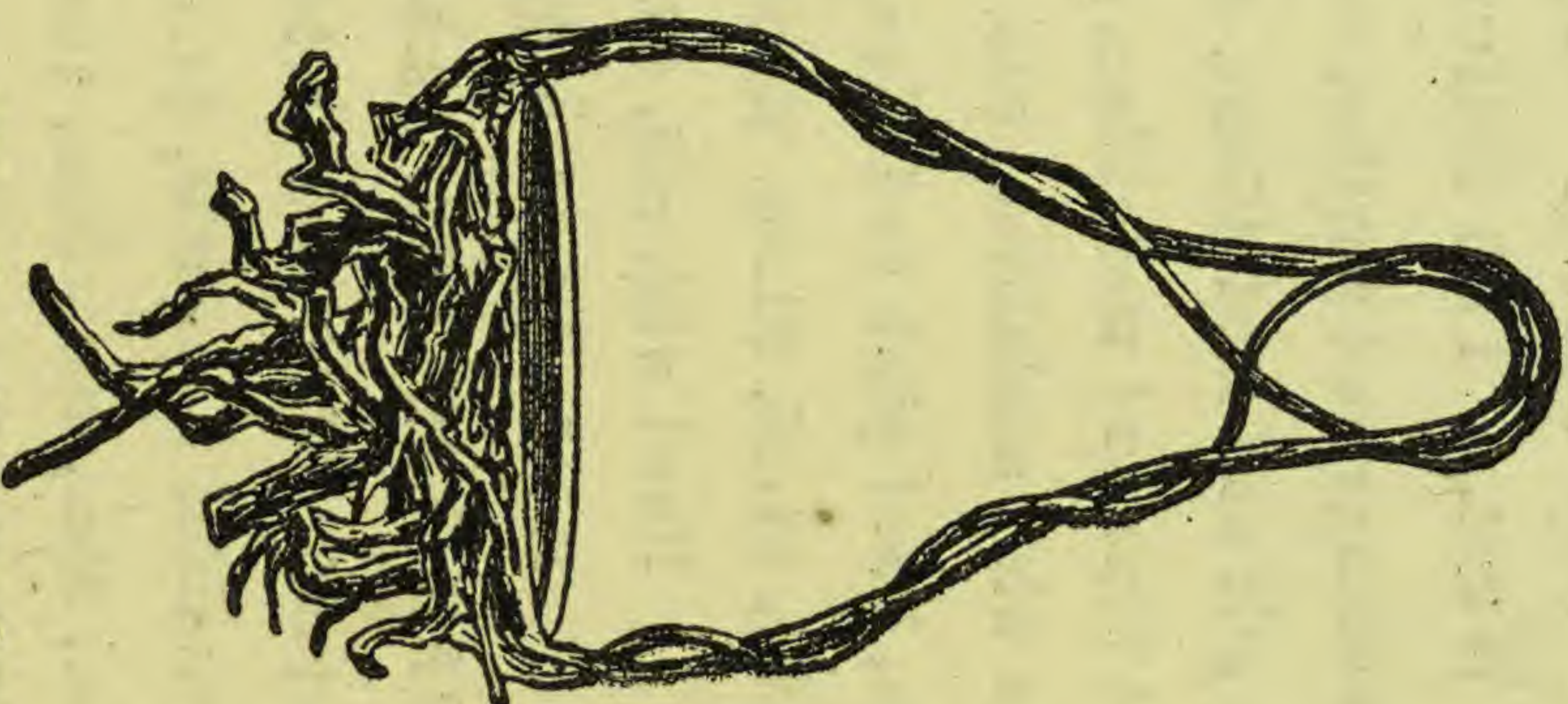


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No. 9—Oval vase, 2 ft. long,
4 ft. 5 inches high. \$15.00.



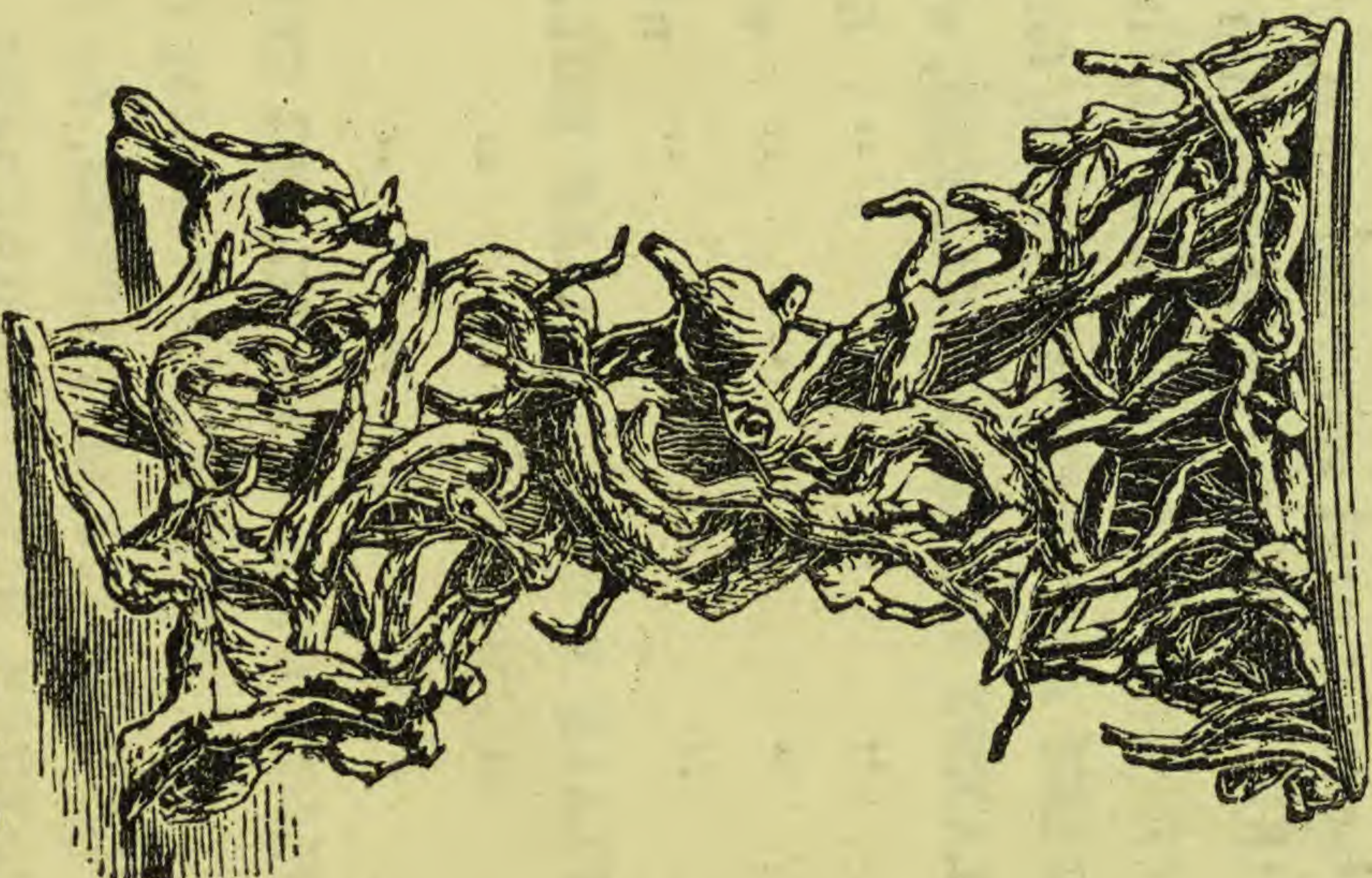
this style: 2 ft. 2 in.,
1 ft. 9 in., 1 ft. 5 in.
high, with oval vases 23,
18 & 16 in. long. \$9.00,
\$6.60, \$3.00 each.



No. 7—Five ft. 5 in. high, with oval
vase 2 ft. long. \$15.00

No. 5—A hanging
basket; 3 sizes, \$2.50,
\$3.00 to \$5.00 each.

No. 3—Two sizes of this
style: 2 ft. 6 in. and 4 ft.
high, with round vases 14½
and 17 in. wide. \$9 & \$11.



No. 2—Three feet 5 inches
high, with an oval vase or bowl
2 feet in length. \$12.00



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Abies magnifica

Oct 1875

fig Sierra Nevada at Clarks Bolander 1868

fig Lemmon 1874

fig Carson Pass, Brewer 2093.

fig Silver Mountain trail, Brewer

fig ? Veitch in the Kew - rather
American.

fig Cult Edinburgh 1869

LOOSE & CO

111 N. 3rd St. St. Louis, Mo.

STANDARD BOOK EXCHANGE



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MISSOURI BOTANICAL GARDEN
GEORGE ENGELMANN PAPERS

STODDARD PHARMACY,
N. W. Corner Easton and Garrison Ave's.
POOLE & CO.



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A. magnifica
H.B. Edm.

Apr 28 '72



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Leitch & Corlies

DRUGGISTS

South-west
Corner Fifth and Market
Streets

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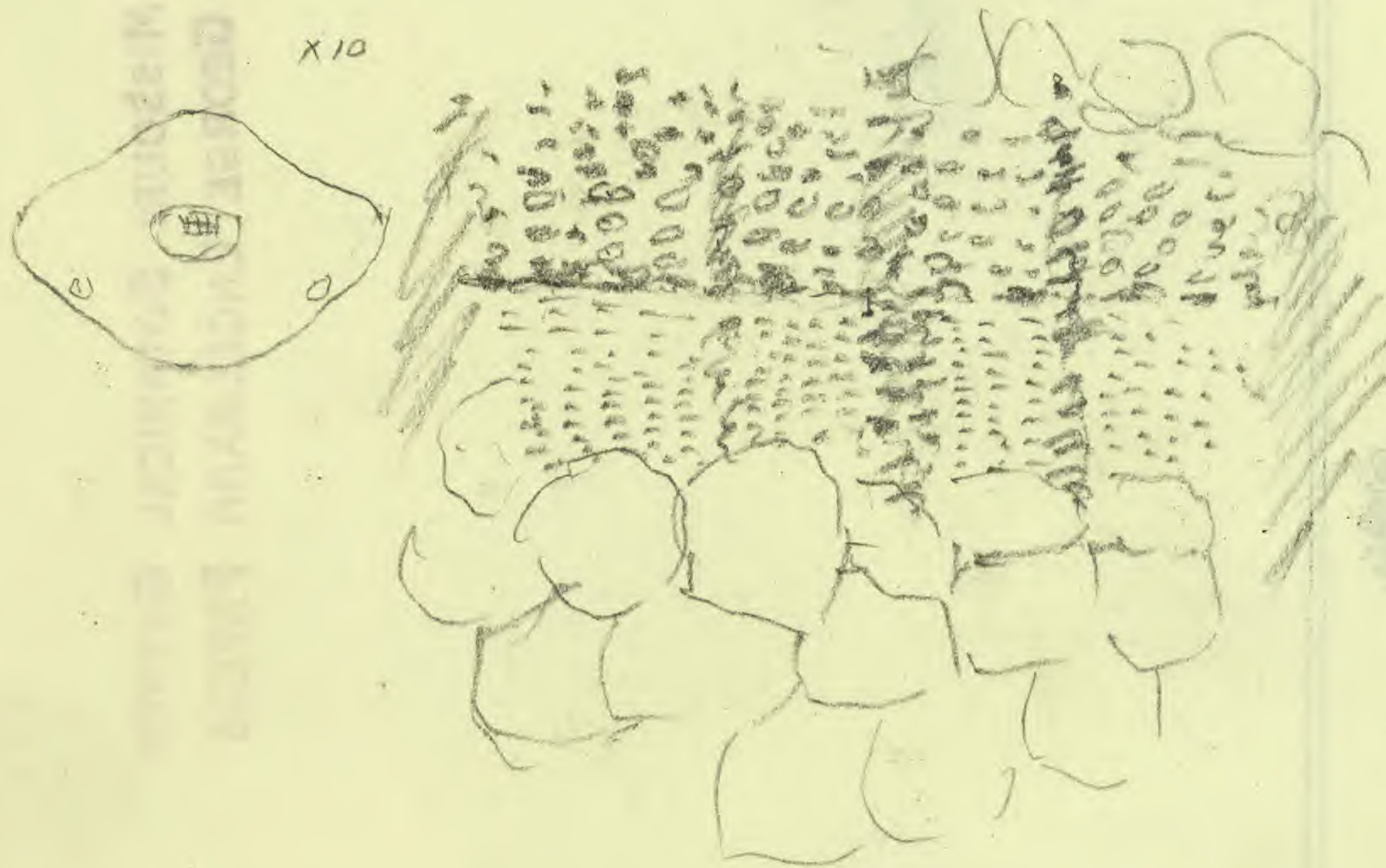
after meg-fire
Big Trees Bolander

June 30th 74

Pollen
old, mouldy

40-45
280 = 0.14 - 0.16 mm

result not very reliable



X280

Single bundle
of vessels
in leaf



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GARDEN

R. C. HARRISON,

508 Leffingwell Avenue,

Druggist & Apothecary

40-45-40
28/ 0.14
7/ 10
7/ 45 6
28
170
168

MISSOURI BOTANICAL GARDEN
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G. F. ENGLEMAN, M.D.,

3003 LOCUST STREET.

13026



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Abies magnifica

July 1st 1874

specimen sent 1866 from Big Trees under

anthers red,
immature

name of *A. nobilis*

_____ 11119 Pollen diam.

$$\frac{40-45}{280} = 0.14-0.16 \text{ mm}$$

specimen sent 1870 from Big Trees under name

_____ 1111 of *A. ambigua*

Pollen

$$\frac{40-47}{280} = 0.14-0.17 \text{ mm}$$



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Magnolia

Dec-77

scales wide 18^{mm} 37^{mm}
high 10^{mm} 21^{mm}

wid 20^{mm} 42
high 12 25

18-20: 10+12

Proportion of scales 10:6
wide high



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100 : 60

15 : 11

10 : 6

20 : 12

in want of any PERFUMERY, FINE
CH BRUSHES, CUT GLASS BOTTLES,
DS, SOAPS, COLOGNES, EXTRACTS in
ONGES, ODOR CASES, or any Toilet
lete Stock at C. K. JONES & Co.,
Also remember when compelled to
keep a full and fresh stock, which
Pharmacists.

41

63

100

21

100

25

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37

42

84

72

69

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Febr 20 1876

Examined all dry leaves of A. Magnifica

The thicker leaves of older trees have on the under side 4 bands of stomata, divided by a green stripe, without stomata. This stripe overlays the hypodermic band, which is placed between the duct and the epidermis; is therefore most conspicuous where the ducts are midway between lateral and lower edge or angle.

In leaves of young plants the ducts are more lateral, the green band or stripe is also present, but more toward the edge, and no stomata appear on its outside.



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Firth & Furler

DRUGGISTS

**South-west
Corner Fifth Market
and Street**

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Abies Pinsapo

Oct 4 1870

var. *Baborensis*, Cosson

Kabylic, 11 Juillet 1861 E. Cosson leg. & det.



32-37 : 18-22 ^{As. 100}

width : height = $3\frac{1}{2}$: 2



immature



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ALEX. LEITCH,
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Corner 4th & Olive Streets, St. Louis.

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Abies Pinsapo
var *Baborensis*, Corsica
Algeria Corsica

Octob 7 1875

x30

stomata
scattered

sterile branch

covered with stomata

loose leaf

covered with stomata

all the leaves examined
have small sub
cortical
ducts

♀
leaf from cone bearing
axis



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Marble Building Cor. Fourth & Olive Sts. St. Louis, Mo.

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don't form tied to wire

from the ground, so as to unite with and form a continuous chain. Among the varieties, the Red Astrachan fruited the second year from bud, and most of the others, the third and fourth year, the fruits being of the finest quality, and of superior size.

The Advantages of Dwarf Apples. The dwarf apple commends itself for various reasons; it occupies but little space, and comes early into bearing; a large collection can be had in small grounds; trees with fruit buds can be transplanted so as to bear fruit the same year; the fruits are not so liable to the bloom from the trees, and the size of the fruit, when proper attention is paid to pruning and thinning out, is superior to that of the standard.

Apart from these advantages the dwarf apple is also worthy of being considered

Ornamentally as well as Practically. There are really few ornamental trees or shrubs that have more claims to beauty than a symmetrically proportioned dwarf apple at the time of its blossoming, when robed in delicate blush and white, and emitting its delicate perfume. Then it is almost worthy a place beside some of the finest flowering shrubs. Nor is there anything more

King, Lady Apple, nettle Canada, Red Canada, melon, Spitzenburg Esopus, Twenty Ounce Apple, Wagener.

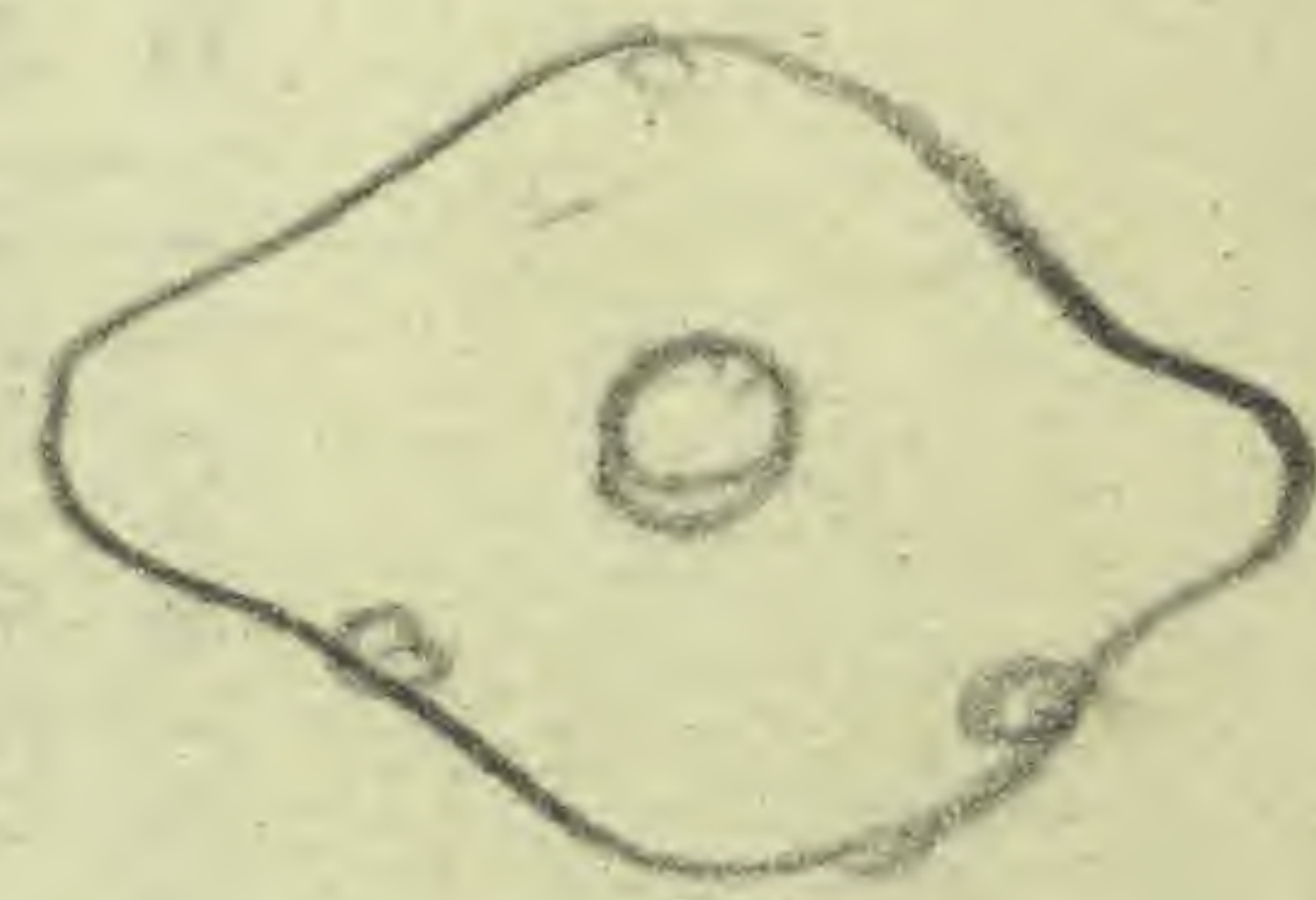
In conclusion I would remark that the system of training dwarf trees may be pursued *ad libitum*. One has but to visit the principal establishments of France, where this system receives the fullest attention to perceive the extent and variety to which it can be carried.

DESTROYING THE CODLING MOTH.

BY C. SELLERS, WOODSTOCK, ILL.

Seeing so many complaints from Orchardists of the ravages of the Codling Moth, I thought I would give you my experience.

The Codling Moth is a small gray moth that flies only at night; it lays its egg in the blossom end of the apple, and in a few days this hatches into a worm that eats its way into the core of the apple. When it (the worm) attains its full growth it eats its way out generally through the side of the apple, and crawls down the limb to search for a place in which to spin its web and change to the cocoon. In about two weeks from the time the worm leaves the apple the cocoon bursts and a perfect moth comes out to lay more eggs; thus



single-veined bundle

4
nobiles
folia adnata
tetragona
puncordes
dentata
utrumque
Stomatigera
fasciculata
vascularis
singularis



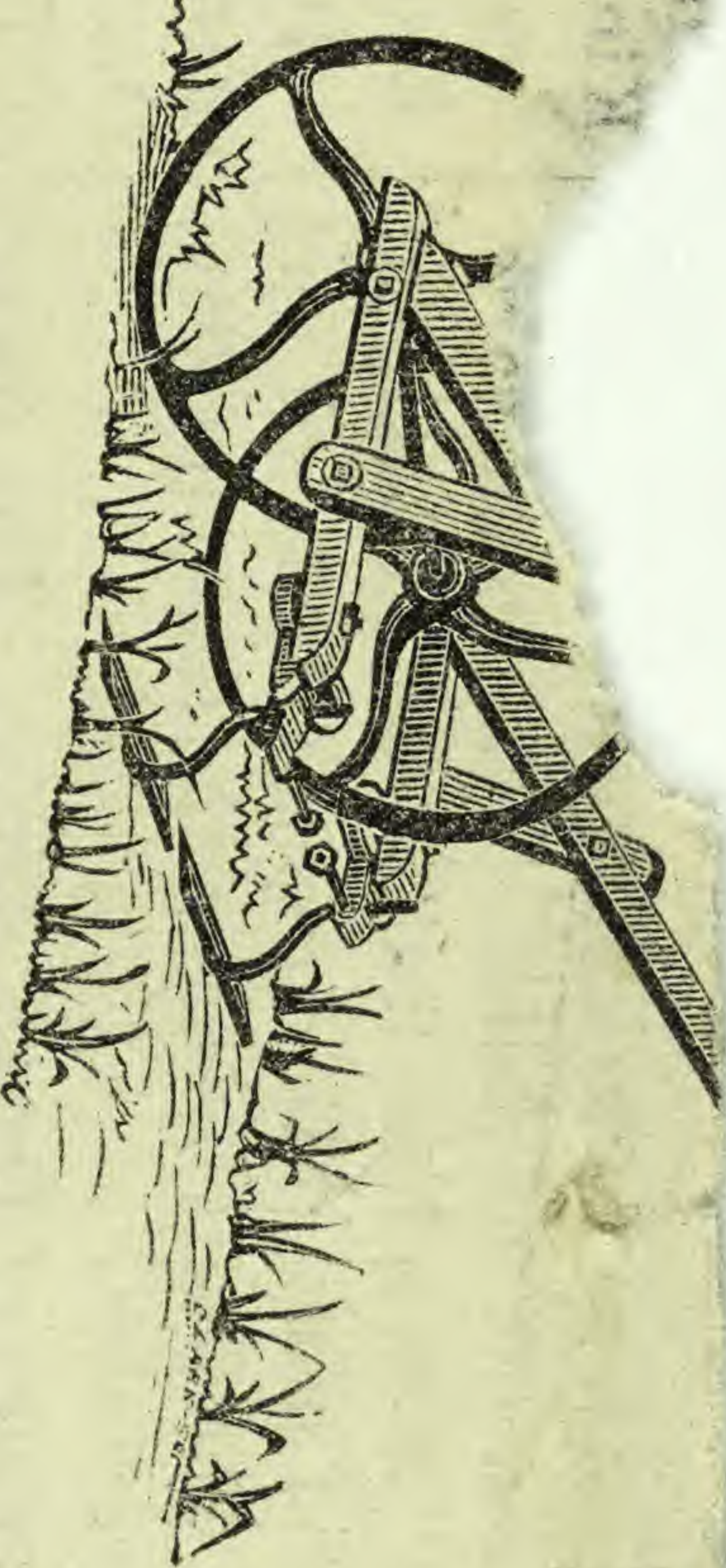
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a single apple. The second year after I adopted the above plan, I had a fair crop, and after that it was a rare thing to find a wormy apple when the crop was gathered in.

I am very particular every spring, when placing my rag traps to scrape all the loose bark from my trees so as to give the worms no harbor but the rags.

EDITORIAL NOTES.

WARBASSE'S WHEEL HOE.—The *Gardener's Monthly* was probably the first to show the importance of the wheel hoe for hand work among garden crops, and to encourage inventors to turn their thoughts in that direction. Most of those we have seen are failures. Those which draw do not allow of the workman seeing what he is doing, unless he walks backwards, and this is absurd; and those which push have been too hard work for the average laborer. We suppose

least comely pears, so far as my experience goes are generally the sweetest, one might suppose the Catherine Pear's charms to have been but skin deep, and hence to have lost their hold on popular favor, were it not that Shenstone declares its juice to have been equal to its dye. Will some Melibeus afford this immortalized fruit a note?—HENRY ATWELL, *Ba. ves.*"

[When Suckling and Shenstone wrote, the varieties of Pears were very few when the list is compared with that containing now many hundreds. The Catherine Pear is not now to be found in any nurseryman's catalogue, nor anywhere except in old orchards, and there we met with it many years ago. It was ruddy on the side exposed to the sun, and when ripe the other parts were yellow. When ripe it was mealy and insipid, and at the best the juice was sweet and flavorless. It was probably introduced during the reign of Henry VIII., and named in honor of one of his queens. Parkinson, in his "Para-



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Abies nobilis

Oct 1875

- fig Mount Shasta ~~Draper~~ No 1401
fig " " ~~Jeffrey~~ in Hb Kew
fig. ? ~~Fremont~~ 32, Dec-1845
fig Californi? ~~Lowe~~ in Hb Kew
fig " ~~Lobb~~ in Hb Kew
fig. Oregon Douglas 1825. Hb Kew.
fig " ~~Newberry~~

- fig Cult Kew 1869
fig " ~~Draper~~ 1869
fig " B. Andree, Frankfurt 1869
fig. " Hort Edinb. 1869

* are probably magnified

BOOTE & CO

212 N. 3rd St. St. Louis, Mo.

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